

STAT

[redacted] visited

STAT

[redacted] on May 26. [redacted] showed us several of their programs in optical fabrication. The items of interest were:

STAT

1. Ionic polishing of glass surfaces. They described the accelerator and the research program they are now engaged in attempting to polish optical surfaces by ionic bombardment. They have only very preliminary results which by and large are not too encouraging. The main advantages one would hope to have with this process are:

a. Smooth finish. There is evidence that the surface obtained this way are smoother than conventionally polished surfaces.

b. The ion beam is charged and can therefore be controlled with electrical or magnetic deflection devices. This makes it appear to lend itself to easy series control of the polishing action.

Their preliminary tests have uncovered many difficult problems with the process. A few are:

a. The ion beam builds up surface charges which deflect the beam.

b. A variety of isotopes in the beam cause strange

spread functions on the surface and therefore make control difficult.

c. The polishing action is very slow.

This project does not look promising at the moment and it will involve heavy expense before a clearer picture will emerge. There seems to be a great deal of interest in this method and support seems to be forthcoming. It would seem wise then to watch the progress but not invest in it at the moment.

STAT 2. [] seem to be actively engaged in several other methods of polishing surfaces using computers to control the strokes in fairly conventional machines. They also appear to be studying for depositing materials in order to make aspheric deformations. This process they were very secretive about which might indicate that they felt they had something interesting.

STAT 3. [] showed us a great deal of their work in interferometry. They have several types of interferometers using multi-beam concepts for testing optical surfaces. They also were working on the use of holograms for testing. The idea is that if one had a perfect reference aspheric, they could make a reference hohographic picture of the surface and then get interference from an unknown surface.

All these methods are interesting and powerful, but only time will tell if they survive the test of time. Most of the techniques they showed us were being operated and used by Ph.D's and the equivalent. It will be another matter to put this technology into the shop, and make it useful.

STAT

showed that they had an imaginative approach to modern optics and they have a strong collection of optical physicists. These people are bound to be a dependable source of know-how in the optics fabrication area, and should be developed as a source of ideas.